Arthur **Ouaknine**

Postdoctoral researcher fellow

(+1) 438 525 2835 | arthur.ouaknine@gmail.com | arthurouaknine.github.io/ | arthur-ouaknine | @ArthurOuaknine

Research Experience

McGill University & Mila — *Montreal, Quebec, Canada*

Postdoctoral researcher fellow — *Sep 2022 - Present*

- Topic: 'Multimodal and multi-task learning for remote sensing applied to biodiversity monitoring'.
- Postdoc advisors: David Rolnick and Etienne Laliberté.
- Keyworks: Multimodal learning, multitask learning, representation learning, foundation models, remote sensing, forest monitoring.

Education

Institut Polytechnique de Paris – Telecom Paris & Valeo.ai (CIFRE) — *Palaiseau, France*

Ph.D. in Computer Science — *2019 - 2022*

- Thesis title: 'Scene understanding using deep learning algorithms applied to radar data for autonomous driving'.
- Thesis supervisors: Patrick Pérez (valeo.ai), Florence Tupin (Telecom Paris) and Alasdair Newson (Telecom Paris).
- Keywords: Deep learning, signal processing, computer vision, Range-Angle-Doppler representations, semantic segmentation.

Institut Polytechnique de Paris – Telecom Paris — *Palaiseau, France*

Post M.Sc. Machine Learning (with Highest Honors) — *2017- 2018*

Paris Pantheon-Sorbonne University — *Paris, France*

M.Sc. Statistical Modelling (with Honors) — *2014 - 2016*

Student Supervision

Hugo Baudchon — *Mila - Université de Montréal*

Master – PhD student: Representation learning for forest monitoring. One paper at ICLR 2026 [1], one paper under review at ICML [12] — *2024 - Present*

Simon-Olivier Duguay — *Mila - Université de Montréal*

Master student: Tree crown segmentation with time series. One paper under review at ICML [12]. — *2025 - Present*

Sulagna Saha — *Mila - McGill University*

Master student: Multimodal long-tail and few-shot classification. One paper at ML4RS Workshop at ICLR 2026 [13]. — *2025 - Present*

Jannik Endres — *Mila*

Internship: Vision foundation models for multi-task learning. One paper under review at ECCV 2026 [11]. — *2025 - Present*

Mélisand Teng — *Mila - Université de Montréal*

PhD student: Vision foundation models for multimodal instance segmentation. One paper at NeurIPS 2025 [2]. — *2024 - 2025*

Eya Cherif — *Leipzig University*

Research visit – PhD student: Representation learning for vegetation trait prediction. One paper at NeurIPS 2025 [3]. — *2024 - 2025*

Nikolaos Ioannis Bountos — *NOA & National Tech. Uni. of Athens*

Research visit – PhD student: Remote sensing foundation models. One paper at AAAI 2025 [4]. — *2023 - 2024*

Venkatesh Ramesh — *Mila - Université de Montréal*

Master student: Temporal semantic segmentation for forest monitoring. One paper at Environmental Data Science 2025 [9]. — *2023 - 2024*

Student Projects — *Telecom Paris*

During my PhD, I supervised 6 Master student projects on optical / SAR remote sensing, and radar scene understanding. — *2020 - 2021*

Grant and Award

Grant

- Granted with the **IVADO Postdoc Entrepreneur Fellowship** (2024 - 2026) to support my innovative work in forest monitoring.

Award

- Winner of the **$10M XPRIZE Rainforest competition** as part of the Limelight Team.
- **Gold Reviewer** Award at ICML 2026.

Invited Talks

I&M Team, LIS Reseach Lab – Université Aix-Marseille — *Marseille, France*
Seminar. *July 2026*

MLIA Team, ISIR Reseach Lab – Sorbonne Université — *Paris, France*
Seminar. *June 2026*

Vista Team, LIX Reseach Lab – École Polytechnique — *Palaiseau, France*
Seminar. *June 2026*

Imagine Reseach Lab – École nationale des ponts et chaussées — *Marne-la-Vallée, France*
Seminar. *June 2026*

NAFGS Conference — *Québec, Canada*
Keynote speaker: *Deep learning for vegetation characterization: from hyperspectral to hyperspatial remote sensing*. *June 2026*

Hyperspatial drone imagery to transform tropical forest science — *Gamboa, Panama*
Speaker (two talks): *Estimating Individual Tree Height and Species from UAV Imagery*; and *Introduction to computer vision*. *April 2026*

Norlab Research Lab – Université Laval — *Québec, Canada*
Seminar: *Leveraging vision foundation models for drone-based forest remote sensing*. *March 2026*

Φ-Talk – European Space Agency (ESA) — *Remote*
Seminar: *Learning to generalize across modalities and scales for forest remote sensing*. *March 2026*

LASTIG Research Lab – National Institute of Geographic and Forest Information (IGN) — *Champs-sur-Marne, France*
Seminar: *Monitoring trees at high resolution*. *July 2025*

CMCC workshop on AI for Carbon — *Como, Italy*
Keynote speaker: *Monitoring trees at high resolution*. *July 2025*

Yale Center for Natural Carbon Capture Spring Symposium — *New Haven, USA*
Keynote speaker: *Monitoring forest restoration projects as natural capture solutions*. *May 2025*

Teaching

Machine Learning Applied to Climate Change — *McGill University*
Lecture for research projects on deep learning for remote sensing. *December 2025*

Deep Learning I — *Telecom Paris – Ecole Polytechniaue*
Teaching assistant: multi-layer-perceptron, recurrent neural networks, convolutional neural networks. *2020 - 2021*

Introduction to Computer Vision — *Telecom Paris – Ecole Polytechniaue*
Teaching assistant: Introduction to image processing, introduction to computer vision. *2020 - 2021*

Machine Learning — *Telecom Paris*
Teaching assistant: Clustering algorithms. *2019*

Community service

Workshop Organizer

- Co-lead organizer of the 'Tackling Climate Change with Machine Learning' workshop at ICLR 2024 (Vienna, Austria).
  - Over 120 research articles submitted, 75 accepted including 7 spotlights and 3 best paper awards. All accepted works are available here.
  - Managing over 120 reviewers and 19 meta-reviewers.
  - Organizing the day-of event: 11 speakers (2 keynotes, 2 panels), 9 spotlights (including tutorials).
  - Audience of 150 people on-site and over 600 people online.
- Co-organizer of the 'Tackling Climate Change with Machine Learning' workshop at NeurIPS 2024 (Vancouver, Canada).

Reviewing

- Machine learning conferences: NeurIPS, ICML, ICLR.
- Computer vision and robotic conferences: CVPR, ECCV, ICRA.
- Meta-reviewer at the 'Tackling Climate Change with Machine Learning' workshop at NeurIPS 2024.

Rubisco AI Web Platform

- Co-founder and chief technical officer of Rubisco AI: Monitoring platform of forest restoration projects with high resolution drone imagery.

Volunteering

- Core team member of Climate Change AI: Lead the webinars team, with average of one event per month with an audience of 50 to 100 people.

Committee and Reading Groups

- Active member of Mila Sustainability Committee.
- Co-organizer of Mila Sustainability Reading Group
- Co-organizer of the Deep Learning Reading Group of the IMAGES team at Telecom Paris.

Publications

Conferences

[1] H. Baudchon, **A. Ouaknine**, M. Weiss, M. Teng, T. R. Walla, A. Caron-Guay, C. Pal, and E. Laliberté. *SelvaBox: A High-Resolution Dataset for Tropical Tree Crown Detection.* International Conference on Learning Representations (ICLR) 2026.

[2] M. Teng, **A. Ouaknine**, E. Laliberté, Y. Bengio, D. Rolnick, and H. Larochelle. *Bringing SAM to New Heights: Leveraging Elevation Data for Tree Crown Segmentation from Drone Imagery.* Neural Information Processing Systems (NeurIPS) 2025.

[3] E. Cherif, **A. Ouaknine**, L. A. Brown, P. D. Dao, K. R. Kovach, B. Lu, D. Mederer, H. Feilhauer, T. Kattenborn, and D. Rolnick. *GreenHyperSpectra: A Multi-Source Hyperspectral Dataset for Global Vegetation Trait Prediction.* Neural Information Processing Systems (NeurIPS) 2025.

[4] N. I. Bountos, **A. Ouaknine**, I. Papoutsis, and D. Rolnick. *FoMo: Multi-Modal, Multi-Scale and Multi-Task Remote Sensing Foundation Models for Forest Monitoring.* AAAI Conference on Artificial Intelligence 2025.

[5] J. Rebut, **A. Ouaknine**, W. Malik, and P. Pérez. *Raw High-Definition Radar for Multi-Task Learning.* Conference on Computer Vision and Pattern Recognition (CVPR) 2022.

[6] **A. Ouaknine**, A. Newson, P. Pérez, F. Tupin, and J. Rebut. *Multi-View Radar Semantic Segmentation.* International Conference on Computer Vision (ICCV) 2021.

[7] **A. Ouaknine**, A. Newson, J. Rebut, F. Tupin, and P. Pérez. *CARRADA Dataset: Camera and Automotive Radar with Range-Angle-Doppler Annotations.* International Conference on Pattern Recognition (ICPR) 2020.

Journals

[8] **A. Ouaknine**, T. Kattenborn, E. Laliberté, and D. Rolnick. *OpenForest: A Data Catalogue for Machine Learning in Forest Monitoring.* Environmental Data Science 2025.

[9] V. Ramesh, **A. Ouaknine**, and D. Rolnick. *Tree Semantic Segmentation from Aerial Image Time Series.* Environmental Data Science 2025.

Thesis

[10] **A. Ouaknine**. *Deep Learning for Radar Data Exploitation of Autonomous Vehicle.* Institut Polytechnique de Paris 2022.

Preprints and Workshops

[11] J. Endres, E. Laliberté, D. Rolnick, and **A. Ouaknine**. *Estimating Individual Tree Height and Species from UAV Imagery.* Under review, ArXiv 2026.

[12] S.-O. Duguay, H. Baudchon, E. Laliberté, H. Muller-Landau, G. Rivas-Torres, and **A. Ouaknine**. *SelvaMask: Segmenting Trees in Tropical Forests and Beyond.* Under review, ArXiv 2026.

[13] S. Saha, **A. Ouaknine**, C. Altimas, E. Laliberté, D. Rolnick. *Understanding Representation Gaps across Scales in Tropical Tree Species Classification from Drone Imagery.* Machine Learning for Remote Sensing Workshop (ML4RS) ICLR 2026.

[14] M. Teng, **A. Ouaknine**, E. Laliberté, Y. Bengio, D. Rolnick, and H. Larochelle. *Assessing SAM for Tree Crown Instance Segmentation from Drone Imagery.* Machine Learning for Remote Sensing Workshop (ML4RS) ICLR 2025.